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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/575,238

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Hideo Takezoe

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11/09/2009

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EXAMINER

NGUYEN, TUAN N

ART UNIT

PAPER NUMBER

2828

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,238	<b>Applicant(s)</b> TAKEZOE ET AL.	
	<b>Examiner</b> TUAN N. NGUYEN	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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***Response to Amendment***

1. In responding to applicant's amendment filed 09/11/2009, claims 1, 4, 10 have been amended. Claim 1 has been canceled.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or non-obviousness.
3. Claims 2-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kopp et al. (US 2002/0118710).

With respect to claim 2, Kopp et al. '710 shows and discloses a laser oscillation element, comprising: a first cholesteric liquid crystal layer containing cholesteric liquid crystals; a second cholesteric liquid crystal layer containing cholesteric liquid crystals facing said first cholesteric liquid crystal layer (Fig 1a-c: 14, 16, or 344, 36 or 52, 54 first and second CLC cholesteric liquid crystal layers); and a defect layer containing a dye which emits fluorescence

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upon optical excitation disposed between said first cholesteric liquid crystal layer and said second cholesteric liquid crystal layer (Fig 1F: **defect** containing dye emits fluorescence between the two CLC)(Section [0061]: LEM light emitting material with defect and dye material), wherein: the selective reflection wavelength band in said cholesteric liquid crystals and the fluorescence emission band of the fluorescence emitted from said dye overlap with each other in at least a part of the wavelength range (it is within one skill in the art to recognize as the output beam emitted from the dye position between the two CLS, it will overlap at least part of the wavelength range with the CLC ). The claim further requires the helical winding directions of the cholesteric liquid crystals in said first cholesteric liquid crystal layer and said second cholesteric liquid crystal layer are identical ; and the transition moments of said dye are parallel to the surfaces of said first cholesteric liquid crystal layer and said second cholesteric liquid crystal layer, wherein said defect layer is composed of an anisotropic medium. Kopp et al. '710 did not discreetly discloses the helical winding direction of first and second crystal are identical, or the transition moments of the dye; however, Kopp et al. '710 did discloses the material are periodic structural (Section [0015][0040]) and Section [0061] &(Fig 1a-f) shows the dye is parallel to the first and second CLC. It has where the general conditions of a claim are disclosed in the prior art, where the remaining elements perform the same as before and discovering the optimum ranges involves only routine skill in the art, in this case the transition movement of the dye parallel to the CLC, and direction of the first and second crystal are the same (Section [0039] *director of the liquid crystal can align parallel by rotate full 360\**). Furthermore, even though Kopp et al. '710 did not discreetly discloses the defect layer composed of an anisotropic medium; however, Kopp et al. '710 did disclose the use of anisotropic medium in the CLC

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(Section [0044]) and disclose the defect may be physical spacing or dielectric material which crystal or liquid crystal can be a dielectric material; and by definition “crystals are often naturally anisotropic, and in some media (such as liquid crystals).”

[http://en.wikipedia.org/wiki/Crystal\\_optics#Anisotropic\\_media](http://en.wikipedia.org/wiki/Crystal_optics#Anisotropic_media)

With respect to claim 3, Kopp et al. '710 shows and discloses a laser oscillation element, comprising: a first cholesteric liquid crystal layer containing cholesteric liquid crystals; a second cholesteric liquid crystal layer containing cholesteric liquid crystals facing said first cholesteric liquid crystal layer (*Fig 1a-c: 14, 16, or 344, 36 or 52, 54 first and second CLC cholesteric liquid crystal layers*); and a defect layer composed of an anisotropic medium disposed between said first cholesteric liquid crystal layer and said second cholesteric liquid crystal layer (*Fig 1F: **defect** containing dye emits fluorescence between the two CLC*); a dye which emits fluorescence upon optical excitation is contained in at least one of said first cholesteric liquid crystal layer, said defect layer and said second cholesteric liquid crystal layer (*LEM light emitting material with defect and dye material*), (*Fig 1F: **defect** containing dye emits fluorescence between the two CLC; Section [0061]*); and the selective reflection wavelength band in said first cholesteric liquid crystal layer and said second cholesteric liquid crystal layer and the fluorescence emission band of the fluorescence emitted from said dye, overlap in at least part of the wavelength range (*it is within one skill in the art to recognize as the output beam emitted from the dye position between the two CLS, it will overlap at least part of the wavelength range with the CLC*). The claim further requires the defect layer composed an anisotropic medium and wherein: the helical winding directions of the cholesteric liquid crystals in said first

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cholesteric liquid crystal layer and said second cholesteric liquid crystal layer are identical.

Kopp et al. '710 did not discreetly discloses the helical winding direction of first and second crystal are identical, or the defect layer composed an anisotropic medium. However, Kopp et al. '710 did discloses the chiral structural CLC material are periodic (*Section [0015][0040]*) and *Section [0044]* the use of anisotropic medium. It has where the general conditions of a claim are disclosed in the prior art, where the remaining elements perform the same as before and discovering the optimum ranges involves only routine skill in the art, in this case having the direction of the first and second crystal are the same, and select known material on the basis of its suitability for the intended used to affect the beam output. (*Section [0039] director of the liquid crystal can align parallel by rotate full 360\**).

With respect to claims 4-6, 11-14 wherein said defect layer contains liquid crystals which are nematic liquid crystals, and the transition moments of said dye and the directors of said nematic liquid crystals are aligned parallel to each other. (*Section [0051]*)(*Section [0039] director of the liquid crystal can align parallel, which nematic liquid crystal orienting along their long axis*).

With respect to claim 7, the claim further requires wherein said dye is contained in the same layer as the nematic liquid crystals. It has where the general conditions of a claim are disclosed in the prior art, where the remaining elements perform the same as before and discovering the optimum ranges involves only routine skill in the art, in this case having the dye in the same layer of the liquid crystals. It has been held select known material on the basis of its suitability for the intended used to affect the beam output.

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With respect to claims 8, 15 it is within one skill in the art recognize the cholesteric liquid crystals have a wavelength at an emission peak in an emission band of the fluorescence emitted from said dye in the selective reflection wavelength band. (Fig 2a-4)

With respect to claims 9, 16-18 wherein said dye is an organic dye. (*Section [0061] organic dye*).

With respect to claims 10, 19 wherein said first cholesteric liquid crystal layer and said second cholesteric liquid crystal layer are aligned such that the directors of the cholesteric liquid crystals in the surface on the defect layer side of said first cholesteric liquid crystal layer, and the directors of the cholesteric liquid crystals in the surface on the defect layer side of said second cholesteric liquid crystal layer, are parallel to each other (*Section [0039] director of the liquid crystal can align parallel*

#### **Response to Argument/**

4. Applicant's remarks filed on 09/11/2009 has been fully considered but they are not persuasive. On pages 6-7, the Applicant point out claim 2,3 require "a defect layer containing a dye ... disposed between first cholesteric liquid crystal layer and second cholesteric liquid crystal layer ... wherein the said defect layer is composed of an anisotropic medium" and claim 3 requires "a defect layer composed of an anisotropic medium disposed between first cholesteric liquid crystal layer and second cholesteric liquid crystal layer", and the disclosure of "anisotropic material in Kopp '710 differs from the anisotropic medium recited". The examiner stands, Kopp '710 discloses in section [0062] defect layer is between CLC and LEM, and the defect may be

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physical spacing or dielectric material which crystal or liquid crystal can be a dielectric material. Furthermore, the argument the Kopp '710 anisotropic material is different from anisotropic medium recited was not shown nor a part of the claim, therefore not considered.

### ***Conclusion***

5. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### **Communication Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tuan N Nguyen/

Examiner, Art Unit 2828

/Minsun Harvey/

Supervisory Patent Examiner, Art Unit 2828